UNITED STATES PATENT APPLICATION FOR:

APPARATUS FOR STORING AND THERMALLY INSULATING A HOT CURLING IRON FROM AMBIENT OBJECTS

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BACKGROUND OF THE INVENTION

Field of the Invention

[0001] Embodiments of the invention generally relate to a thermally insulating bag configured to receive and insulate a hot curling iron from ambient objects.

Description of the Related Art

[0002] The health and beauty industry flourishes in nearly every economically developed country in the world, as persons in these countries are generally inclined to place substantial emphasis on their appearance. One of the most popular niches of the health and beauty industry is the hair care product industry, which generally includes both cleaning products, such as shampoos, conditioners, gels, sprays, etc., and maintenance products, such as hair dryers, curling and straightening irons, brushes, combs, etc. As such, persons in economically developed countries are very likely to regularly purchase and/or own several health and beauty hair care products.

[0003] Persons in economically developed countries are also very likely to travel, either for business or for pleasure, as the availability of travel services has become commonplace in economically developed societies. The combination of a substantial reliance upon hair care products along with the propensity of persons to travel has generated a need for several new products configured to address the challenges associated with meeting both hair care needs and portability needs. However, one challenge that has not been effectively addressed is the portability of hair care curling irons. More particularly, curling irons are generally heating devices configured to apply heat to a person's hair in order to impart or remove curls therefrom. In order for this process to be effective, the heating devices generally operate at temperatures between 100°F and about 250°F or more, for example. As such, these devices contain a substantial amount of thermal energy, which presents a challenge when

traveling, as devices operating at these temperatures can take up to an hour or more to cool to an acceptable temperature for storage during travel. This is generally unacceptable for travelers, as waiting an hour or more for a curling iron to cool before stowing the iron in luggage for departure is an unwanted waste of time that may cause travelers to miss a plane or other travel related event.

[0004] Additionally, the heat contained in curling irons, flat irons and other heated health and beauty devices after the device has been turned off also causes challenges for domestic use. For example, in a domestic situation a hot curling iron left out on the counter is prone to melting other products positioned to closely, to burning persons that are unaware that the iron is still hot, and possibly even starting a house fire. Heated hair care devices therefore present a substantial danger to harming children and to damaging property as a result of the heat contained in the devices after they have been turned off or have been left unattended.

[0005] Therefore, there is a need for an apparatus configured to store a hot curling iron, flat iron, or other heated hair care product therein for travel or for domestic storage/protection, without requiring the hot device to cool before being stowed in the apparatus. There is also a need for such an apparatus to protect children and domestic objects from damage or harm that may occur from contact with the hot device.

SUMMARY OF THE INVENTION

[0006] Embodiments of the invention generally provide a thermally insulating bag configured to receive a hot curling iron and insulate the hot iron from ambient objects. The bag is configured to receive multiple shapes of curling irons, *i.e.*, traditional barrel-type irons of various diameters, flat surface-type straitening irons, along with other shapes of hot iron-type hair care devices. Further, the bag provides multiple compartments configured to receive and insulate multiple irons from each other or from ancillary components of a single iron, such as a cord, from the hot barrel or heating portion of the iron.

[0007] Embodiments of the invention may further provide a thermally insulating curling iron bag. The bag generally includes a first thermally insulating compartment, a second thermally insulating compartment, a thermally insulating partition positioned between the first and second compartments, a closable lid member positioned to cooperatively close the first and second compartments from ambient atmosphere, and a thermal vent configured to communicate heat from the first and/or second compartments to the ambient atmosphere.

[0008] Embodiments of the invention may further provide a thermally insulating curling iron bag. The bag may include a thermally insulating body defining a first and second compartments, the first compartment being thermally isolated from the second compartment by a thermally insulating partition. The bag may further include a thermally insulating lid member closably positioned over the first and second compartments, and a thermal vent positioned in an egress gap between the body and the lid member in a closed position. The bag is generally configured such that the body and partition member are formed from a multilayer construction comprising a thermally insulating metallized fabric, a thermally insulating padding layer, and an outer decorative layer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] In order to better understand the specific details and aspects of the invention, a more particular description of the invention may be had by reference to the following detailed description and the appended drawings. It is to be noted, however, that the appended drawings illustrate only typical or exemplary embodiments of the invention, and are therefore, not intended to be limiting on the scope of the invention, as the invention may admit to other, equally effective embodiments not expressly illustrated in the drawings.

[0010] Figure 1 illustrates a top/front perspective view of an exemplary curling iron bag 100 of the invention.

[0011] Figure 2 illustrates a sectional view of an exemplary wall portion of the curling iron bag of the invention.

[0012] Figure 3 illustrates a sectional view of an exemplary partition portion of the curling iron bag of the invention.

[0013] Figure 4 illustrates a side sectional view of the exemplary curling iron bag of the invention with the lid member in a closed position. Figure 4 also illustrates at least one of the air vents of the curling iron bag of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] Embodiments of the invention generally provide a thermally insulating bag configured to receive a heated hair care device and insulate the hot device from ambient objects. The bag is capable of receiving multiple shapes, sizes, and types of heated hair care devices, such as curling irons, flat irons, and/or straightening irons. However, although the following description of the invention describes the invention with respect to a curling iron, it is to be noted that the invention is not intended to be limited to any particular configuration of a curling iron. The inventors contemplate that essentially any sort of heated hair care device may be stored in the bag of the invention. Additionally, the bag provides multiple compartments configured to receive and thermally insulate multiple heated devices from each other, or the cord of a single device from the heating element portion of another device.

[0015] Figure 1 illustrates a top/front perspective view of an exemplary curling iron bag 100 of the invention. Bag 100 is illustrated in an open position, *i.e.*, lid 102 is shown as open such that the interior 104 of bag 100 is visible. The interior portion 104 of bag 100 generally includes a first compartment 106 and a second compartment 108. Additionally, a partition member 110 is positioned in the interior 104 and is configured to separate (physically and thermally) the first compartment 106 from the second compartment 108. Each of compartments 106 and 106 are sized to receive a curling iron (not shown) therein. The compartments 106, 108 are selectively isolated (physically and thermally) from ambient by the closing of the lid member 102. More particularly, lid member 102 is generally attached to the main body portion 101 of the bag 100 along a bendable joint 112, such as a fabric hinge or other device. Additionally, lid

member 102 generally includes a fastening member 114a that is configured to engage another fastening member 114b to secure the lid member 102 in a closed position. Exemplary fastening members 114 include snaps, clasps, Velcro®-type securing devices, etc.

[0016] Bag 100 is constructed of multiple layers, wherein the combination of the multiple layers is configured to insulate a heated iron positioned in one of compartments 106, 108 from ambient objects. More particularly, the body 101, the partition 110, and the lid member 102 are manufactured from a multilayer construction of materials that generally includes a thermal barrier layer 202 positioned facing the interior 104 of bag 100, a thermally dissipative padding layer 204 positioned adjacent the thermally insulating layer 202, and a decorative and thermally insulating outer layer positioned adjacent the padding layer 204. For example, Figure 2 illustrates an exemplary cross section of a sidewall of bag 100 in the main body portion 100, *e.g.*, one of the exterior walls of compartment 106 or 108. The wall construction or layering generally includes a thermal barrier layer 202 positioned adjacent the interior 106, 108. The thermal barrier layer 202 may be a layer configured to dissipate heat without transmitting sufficient heat therethrough to damage adjacent layers of material or objects ambient to bag 100. The layer positioned adjacent the thermal barrier layer 202 is generally a relatively thick (when compared to the thermal barrier layer) padding layer 204 that is also configured to be a thermal barrier, *i.e.*, padding layer 204 also provides thermally insulating properties, and as such, padding layer 204 contributes to the process of insulating or preventing heat from traveling from the interior compartments 106,108 to the area surrounding bag 100. The padding layer is generally configured to have a mass to total volume ratio of less than about 1:5, *i.e.*, the padding layer 204 generally contains at least five times more air volume in the padding layer 204 than the volume of the material in the padding layer 204. The substantial amount of free space in the padding layer 204 facilitates heat dissipation and substantially slows heat transmission through the padding layer 204. As such, padding layer 204 is generally a foam or other type of material construction that includes a substantial amount of air in the

construction of the material. The high air content of the material substantially increases the thermal resistance of the material, and as such, increases the total thermal resistance capability of the curling iron bag 100 of the invention. The final layer in the construction of the body wall is a decorative fabric layer 206. This layer may be a regular decorative fabric, as this layer is generally the outer layer of bag 100, *i.e.*, the visible exterior layer of bag 100. However, in some embodiments of the invention, the outer layer 206 may be a decorative fabric that is also thermally insulating, or at least a fabric layer that is configured to prevent transmission of a majority of the heat applied to the fabric therethrough. The multilayer construction of the body wall operates to dissipate and/or prevent thermal energy from transmitting through the walls to the ambient, and as such, heat from a curling iron positioned in bag 100 is not transmitted to adjacent objects.

[0017] Figure 3 illustrates a sectional view of the partition 110. The partition 110, in similar fashion to the construction of the body wall portions of bag 100, may also be made up of a multilayer thermally resistant construction. More particularly, partition 110 generally includes a first thermally insulating barrier layer 302, a relatively thick thermally resistive padding layer 304 may optionally be included, and a second thermally insulating barrier layer 306. The outer barrier layers 302, 306 form the outer exposed portion of the partition 110, *i.e.*, the surfaces that define one side of the compartments 106, 108. The multilayer construction of partition 110 operates to dissipate and/or prevent thermal energy from transmitting therethrough from one of compartments 106, 108 to the adjacent compartment. However, the padding layer 304 is an optional layer.

[0018] Figure 4 illustrates a side sectional view of bag 100 with the lid in a closed position. In this view the volume of compartments 106, 108 is shown, and the interior partition 110 thermally separating the two compartments 106, 108 is also shown. Additionally, Figure 4 illustrates a first thermal vent 402 formed by bag 100 in the closed position. More particularly, when bag 100 (lid 102) is in the closed position, the combined structure of side/body walls 101, partition 110, and

lid 102 forms a thermal escape or vent 402. Vent 402 generally comprises a passage configured to allow air to flow from compartments 106, 108 over a top portion of the walls 101 and partition 110, and out of the interior 104 of bag 100 to the ambient atmosphere. Vent 402 is sized such that only a fraction of the heat contained in the interior 104 of bag 100 may escape therethrough, and as such, vent 402 is generally configured as a low volume bypass for heat to escape the interior of bag 104. More particularly, vent 104 is configured such that when a hot iron is positioned in one of compartments 106, 108, that the volume of heat or hot air escaping through vent 402 is not sufficient to cause harm to ambient objects. For example, the inventors have calculated that the cross sectional area of vent 402 for a bag 100 having an exterior surface area of between about 0.75 ft^2 and 1.5 ft^2 will be between about 0.25in^2 and about 0.5in^2 for the total vent 402 area (there are two vents 402, *e.g.*, one on each of the longitudinal ends of bag 100). Further, the size of vents 402 is configured such that less than about 10% of the heat contained in the interior 104 may escape therethrough.

[0019] Figure 4 also illustrates the second vent 404 of bag 100. Second vent 400 is defined as the space between the exterior of body 101 and the interior surface of lid 102. This space also operates as an air passage for heat to escape the interior 104 of bag 100. However, since vent 404 will generally have a length that is equal to the length of bag 100 (and a width of between about 1.0mm and about 5mm, for example), the inventors contemplate that between about 25% and about 95% of the length of the interior surface of lid 102 may have to be attached to the exterior surface of body 101 to minimize the size of vent 404. For example, the interior surface of lid 102 may be lined with a first side of an adhesive or affixing device, while the outer surface of body 101 positioned adjacent lid 102 in a closed position may be lined with a second side of an adhesive or affixing device so that the first and second devices may be brought together and close off or minimize the vent 404 area. An exemplary affixing device that may be used to accomplish this purpose is Velcro®, for example.

[0020] The thermally insulating layer discussed above may generally be a fabric-type material that has the ability to dissipate heat. Exemplary fabrics with this capability include those fabrics used in fire protection equipment (gloves, coats, pants, etc. that are worn by fireman, steel workers, or others that are likely to be exposed to high temperatures or direct flames). Dupont's NOMEX® is an exemplary material that is regularly used for thermal protection that may also be used in the curling iron bag of the invention. Another thermally insulating material that may be effectively used in the curling iron bag of the invention is Basofil® fiber-type materials. Further, current technology in the thermal resistant fabric industry uses fabrics that have been metallized, *i.e.*, fabrics that have been either infused, interwoven, or backed with a metal containing material. For example, several thermally resistant fabrics currently include a metal or foil backing that is configured to reflect heat. Exemplary metals that may be used for foil backing include aluminum containing foil materials, for example, wherein the aluminum containing foil material has a thickness of between about 0.1mm and about 0.5mm. Alternatively, other metallized fabrics include what is best described as a metal doped or infused fabric, that is to say that the fabric itself has a metal material woven therein. In this configuration, for example, the metal content of a fabric may be between about 10% and about 40%, for example. In other embodiments of the invention, fabrics may be infused or doped with other materials configured to assist with thermal energy dissipation. Examples of these materials include silica based materials, carbon based materials, and ceramic-type materials. Yet another exemplary material that may be used for the thermally insulating material of the curling iron bag of the invention is woven polyolefin fabrics.

[0021] The fabric perimeter of each of the above discussed layers is generally sewn or otherwise affixed together to form bag 100 of the invention. The perimeter of each of the layers may further be covered with a decorative band configured to conceal the fabric edges and sewing areas.

[0022] Although the foregoing is generally directed to at least one embodiment of the invention, other equally effective embodiments and/or variations of the invention may be constructed without departing from the essence or scope of the invention, wherein the essence and scope of the invention is defined by the following claims.